STATE OF ALASKA

Jay S. Hammond, Governor

Annual Performance Report for

ESTABLISHMENT OF GUIDELINES FOR PROTECTION OF THE SPORT FISH FISH RESOURCES DURING LAND USE ACTIVITIES

by

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Study D-I
A Study of Land Use Activities
and Their Relationship to the
Sport Fish Resources in Alaska

Job No. D-I-A
Establishment of Guidelines for Protection of the Sport Fish Resources During Land Use Activities

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RESEARCH PROJECT SEGMENT

State: Alaska Name: Sport Fish Investigations

Project No.: F-9-10

Study No.: D-I Study Title: A STUDY OF LAND USE ACTIVITIES AND THEIR RELATIONSHIP TO THE SPORT FISH RESOURCES IN ALASKA

Job No.: D-I-A Job Title: Establishment of Guidelines for Protection of the Sport Fish Resources During Land Use Activities

Period covered: July 1, 1977 to June 30, 1978

ABSTRACT

The Land Use Project has completed its sixth year of effort to protect the sport fish resources in Southeast Alaska. A total of 18 streams were visited during the field season, either to collect basic biological information or in response to proposed or existing land use activities. Nine of these streams were visited in conjunction with the U.S. Forest Service and one during an Interdisciplinary Team (IDT) survey, while the remaining areas were visited by Alaska Department of Fish and Game personnel only.

A considerable amount of the time and effort expended by project personnel during the 1977-1978 period was related to a massive planning effort instigated and administered by the U.S. Forest Service and involving numerous agencies--State, Federal, and private--for the purpose of identifying the resource values of lands within the Tongass National Forest (i.e. nearly all of Southeast Alaska) so that reasonable land management policies and land use designations can be established. Since the Tongass Land Management Plan (TLMP), scheduled to be completed by the end of 1978, will affect most of the sport fishing areas in Southeast Alaska; project personnel with the help of most of the Regional staff of the Sport Fish Division have assembled, evaluated, and prioritized information relating to sport fishing for inclusion in the planning process. This information, along with similar data on commercial fish and estuarine resources, has been submitted to the U.S. Forest Service through a Fisheries Task Force (FTF) in the form of lists, maps, map overlays, rating forms, and written and verbal communications. The FTF has held meetings nearly every month since the fall of 1976 and project personnel have been active throughout this period. Although the

volume of material submitted during this process is beyond the scope of this report, an attempt has been made to summarize the activities of the FTF and relate them both to the TLMP and the Land Use Project.

BACKGROUND

The current Land Use Project originated in 1970 as a job titled "Effects of Logging on Dolly Varden." Emphasis of the study included determining the pre-logging status of fish populations in Hood Bay Creek and monitoring pre-logging fish populations of seven additional streams within the Hood Bay watershed on Admiralty Island (Reed and Armstong 1971).

The second year of study included general surveys of logged streams throughout Southeast Alaska, aquatic insect surveys, monitoring pre-logging fish populations on eight streams within the Hood Bay watershed, and compiling an annotated bibliography on the effects of logging on fish (Reed and Elliott, 1972). After this study was completed several recommendations concerning the future direction of this project were made. These recommendations included the following points:

1. The overall effects of land use activities on all sport fish species should be studied and efforts should be focused in two areas.

2. Efforts should be made to provide technical assistance to the U.S. Forest Service during pre-logging surveys and to participate in presenting educational programs to loggers covering methods of protecting small streams during logging operations.

3. The effects of land use activities on rearing fish habitat should be studied by finding methods of making reliable population estimates of rearing fish and determining abundance, distribution, and species of aquatic insects.

Following the recommendations made in 1972 the study titled "A Study of Land Use Activities and Their Relationship to the Sport Fish Resources in Alaska" was established in 1973. This study included two jobs: "Establishment of Guidelines for Protection of Sport Fish Resources During Logging Operations," and "Ecology of Rearing Fish." The first job emphasized Sport Fish personnel serving as members of Forest Service multi-disciplinary teams on pre-logging surveys, designating important sport fishing waters in Southeast Alaska, presentating educational programs at logging camps, and publishing a pamphlet on logging and its effect on fish habitat (Elliott and Reed, 1973). The pamphlet served as the first vehicle for establishing guidelines for the U.S. Forest Service and logging operators.

From 1974 through 1977 the job duties were similar; Project personnel participated in Interdisciplinary Team (IDT) surveys and resurveys after logging, reviewed and commented on various Environmental Impact Statements, provided information and recommendations to the Alaska Department of Natural Resources regarding the Haines/Skagway Land Use Management Study, and presented educational programs on logging and fish habitat to various groups.

The areas covered during this time period included Haines/Skagway, the Pavlof River system, the Mud Bay-Otter Lake system, the Karta-Salmon Lake system, 22 freshwater systems in the Yakutat forelands, 15 watersheds on North Chichagof Island, the Alecks Lake system on Kuiu Island, and logged watersheds at Corner Bay (Kuiu Island), Naukati Bay (Prince of Wales Island), the North Thorne River system (Prince of Wales Island), and the Bear Creek system (Mitkof Island).

Recommendations were provided to the responsible land management agency and followed the operational guidelines listed in the pamphlet, "Logging and Fish Habitat" (U.S. Forest Service, Alaska Department of Fish and Game, Alaska Department of Natural Resources, 1973). These recommendations included employing leave strips in braided-channel areas, along erosion prone stream banks, to maintain aesthetics in important angling locations; locating bridges and roads where sediment introduction into streams would be minimized; locating log dump sites where chemical and physical impacts on shellfish, schooling salmon, and impacts on high-use recreational areas would be reduced; identifying and protecting critical rearing and spawning areas; locating sites for fishermen access trails; protecting stream banks and bottoms by felling and yarding trees away from the stream; evaluating barrier falls for possible improvement measures; and evaluating the effects of culvert installation or removal on fish habitat (see Annual Reports: Elliott and Reed, 1974; Dinneford and Elliott, 1975; Dinneford and Elliott, 1976; and Elliott and Hubartt, 1977).

In 1976, the U.S. Forest Service introduced the "Draft Tongass National Forest Guide" which includes the following statement: "This draft guide is the initial step in redefining the goals and policies for managing the Tongass National Forest." Some of the goals and policies included in this "draft guide" reflect the efforts of this project in the area of fish habitat protection.

Under the same job title Sport Fish Land Use Project personnel have become involved in the Tongass Land Use Management Plan (TLMP) as it relates to sport fishing resources in Southeast Alaska. During the 1977-78 period personnel have supplied input for this massive planning process through the Fisheries Task Force (FTF) which was formed to identify, evaluate, and prioritize all the fishery resource values included within the Tongass National Forest in Southeast Alaska. Since the U.S. Forest Service has continually asserted that the TLMP process is the best method for insuring the protection of important fish and wildlife resources in the Tongass, the Alaska Department of Fish and Game has given cooperation with the Forest Service in this regard a top priority status. Although the TLMP process has required a great deal of time and effort, Land Use personnel also surveyed or participated in surveys of eighteen areas in Southeast Alaska in relation to various land use activities.

RECOMMENDATIONS

Research

1. A continued effort should be made to identify waters important to the sport fish resources and provide recommendations to protect this resource during land use activities. Cooperation with the U.S. Forest Service is required and should be accomplished by:

    a. Participating in the development of the Tongass Land Management Plan (TLMP) through the Fisheries Task Force to insure that important sport fishing areas receive proper consideration during all planning phases.

    b. Providing resource information during the land use allocation process.

    c. Evaluating the results of the allocative phase of planning and recommending changes to TLMP team leaders.

    d. Participating in field surveys as required to determine recreational potential, access to the sport fishery, distribution and abundance of juvenile fishes, critical habitat and environmentally sensitive areas. This information will be used to recommend the size and configuration of fish habitat management units through the IDT process at both the planning and implementation phases.

2. Technical assistance should be provided to the Department of Natural Resources in land use planning on State lands by surveying watersheds prior to land use activities, advising the Department of Natural Resources of the guidelines necessary to protect sport fish resources, and cooperating throughout the land planning process.

3. Evaluation of the effectiveness of recommendations and guidelines made available to land managing agencies should be continued.

4. Efforts to inform industry and the public of the importance of fish habitat should be continued.

Management

Because of the increasing numbers of people and increasing accessibility to remote areas in conjunction with increasing land use activities, and because of the increasing number of requests of Land Use Project personnel for resource information by numerous agencies and individuals, efforts should be continued to assess and regulate the impacts upon the sport fish resources and to provide resource information in a timely manner by:

1. Identifying sport fishing areas accessible to residents of major oil, mining, and logging camps and measuring the harvest of sport fish in areas receiving major impacts.

2. Identifying sport fish resources accessible through the Alaska Marine Highway and connecting road systems and measuring the harvest of sport fish in areas receiving major impacts.

3. Developing an efficient data retrieval system for sport fish resources information in cooperation with the Sport Fish Catalog and Inventory project leader and other divisions within the Department of Fish and Game.

OBJECTIVES

1. To designate waters important to the sport fish resources and make recommendations to protect this resource during land use activities.

2. To determine the effectiveness of recommendations and guidelines made available to the land managing agencies.

3. To advise industry and the public of the importance of fish habitat and the methods needed to protect this habitat during land use activities.

TECHNIQUES USED

Stream Surveys

A total of 18 streams were surveyed during this field season. Three "Quality Watersheds" were visited--Red Bluff Bay (3 streams), Plotnikof River, and Duncan Canal Salt Chuck (2 streams). Six streams were surveyed during an IDT survey on Catherine Island. Five streams were visited to examine specific problems related to logging. A post-logging resurvey of the White Rock Creek area was conducted.

The quality and quantity of information obtained from each survey varied in relation to the time spent in the area and the specific reason for the visit; but, whenever possible, attempts were made to collect data on the presence and abundance of fish species and aquatic insects, the morphology and physical characteristics of the stream, and specific areas which could be or were being adversely affected by land use activities.

Depending upon time constraints the following stream survey techniques were employed whenever possible:

1. Use of minnow traps to capture rearing fish provides information about fish species presence and relative abundance.

2. Use of Surber and drift net samplers provides information about aquatic insect species and relative abundance.

3. During foot surveys, use of rough mapping techniques provides information about the physical characteristics of streams such as: pool/riffle ratios; streambed type; locations of falls, log jams, windthrow areas, braided channel areas; unstable soils, stream widths, depths, and flow rates; lakes, ponds, beaver impoundments; and potentially important rearing and spawning areas.

4. If time is limited, aerial surveys (helicopter or fixed-wing) provide general information about system morphology, potential barrier falls, potential spawning areas, and areas which may be adversely affected by developmental activities (e.g. slide areas).

5. Rod-and-reel sampling provides information about the potential sport fishing value of the system and when used in conjunction with tagging of fish can provide information about the movement and distribution of sport fish species.

Fisheries Task Force

A substantial portion of the effort expended during this season was related to the Tongass Land Management Plan (TLMP) being developed by the U.S. Forest Service. Project personnel gathered, organized, and presented available information on the important sport fishing areas in Southeast Alaska; developed rating systems for the purpose of assigning numerical values to important watersheds; and attempted to insure that all important sport fishing areas received proper consideration during the land use planning process.

The Fisheries Task Force (FTF) was formed in the fall of 1976 for the purpose of collecting, evaluating, and prioritizing information on the fisheries resources within the Tongass National Forest. This information will be incorporated into the TLMP which will, ". . . define where combinations of land use opportunities will be made available." (Southeast Alaska Area Guide, 1977). FTF members include representatives from the U.S. Forest Service, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Alaska Department of Environmental Conservation, and the Alaska Department of Fish and Game. Personnel from the Sport Fish Division's Land Use Project have been active participants in every FTF meeting.

Data Collection:

During the early meetings of the FTF the problems of how much and what kinds of data could be handled within the time constraints of the TLMP were discussed; and after obtaining a general idea of the quantity and quality of information available, the FTF decided to concentrate its efforts in the following areas:

1. The identification of all important streams, lakes, and estuaries.

2. The estimation of the effect of maintaining the existing fisheries resources on the volume of commercial timber that may be harvested.

3. The rating of streams, lakes, and estuaries in accordance with the available information.

Although the FTF attempted to gather all available information, because the information was often incomplete (sometimes nonexistent) for particular watersheds in the Tongass National Forest, only the following information was evaluated and prioritized:

- Fish species presence and abundance
- Available spawning area
- Shellfish species presence and use
- Watershed morphology and estuarine area
- Rare or unique fish populations
- Important sport fishing areas
- Areas with critical habitat
- Areas of scientific interest
- Rehabilitated or enhanced areas
- Areas of exceptional productivity
- Areas with enhancement potential
- Areas with unique management situations
- Streams with barriers to salmon migration
- Lakes important to anadromous fish
- Major Dolly Varden overwintering lakes
- Important steelhead, cutthroat, and/or rainbow trout areas

At the request of the U.S. Forest Service, personnel from the U.S. Fish and Wildlife Service conducted a short term study in an attempt to estimate the effects of fisheries habitat protection zones with respect to timber harvest. Although initially assigned as a task for the FTF, this job subsequently became a separate project. A project report is available through the Ecological Service Division of the U.S. Fish and Wildlife Service in Juneau. Copies of the report have also been provided to each of the agencies represented on the FTF.

Data Evaluation:

An integral part of the evaluation process was the development of rating systems for commercial fishing, sport fishing, and estuarine values. The actual rating systems and their relationship to the Forest Service planning process will be discussed in the next section. However, their development served to focus the energies of the FTF on a basic question: What are the major factors that indicate the fisheries resource values of streams, lakes, and estuaries in the Tongass National Forest?

The items listed previously represent some of the major factors related to fishery resource values; but it should be understood that the listing does not include all of the major factors, but rather those that fall within the realm of the available information. Even information relative to the items listed is not uniformly available for every watershed in the Tongass. The Fish and Wildlife Service Study identified 3,293 streams in the Tongass Forest by examining one inch to the mile U.S. Geological Survey maps. Only about 600 of these streams had been examined in sufficient detail to warrant

the application of the rating systems that were developed. However FTF members agree that the streams that were rated included all the watersheds of major importance. Of the rated systems, the Sport Fish Division provided information on over 100 systems and the Commercial Fish Division provided information on over 450 streams.

The watersheds submitted to the FTF by the Sport Fish Division fall into the following categories: (1) Quality Watersheds--gold pin areas; (2) Quality Watersheds--red pin areas; (3) additional watersheds important for steelhead trout, Salmo gairdneri Richardson; rainbow trout, S. gairdneri Richardson; cutthroat trout, Salmo clarki Richardson; or Dolly Varden, Salvelinus malma (Walbaum); and (4) known anadromous lakes.

A Quality Watershed has been defined as a watershed of outstanding natural aesthetic beauty in a wilderness setting, with fishing characteristics that add up to an exceptional angling experience.

Eighty-three watersheds in Southeast Alaska fit this definition and have been divided into gold pin areas and red pin areas. Nineteen systems have been identified as gold pin areas; these systems represent the watersheds containing the highest sport fishing values in Southeast Alaska. Sixty-four watersheds have been identified as red pin areas. These systems also fit the definition of a Quality Watershed but are slightly less valuable in terms of the sport fishery.

Thirty-three additional systems were identified as being specifically important for their populations of steelhead trout, cutthroat trout or Dolly Varden. All of these systems possess existing or potential high sport fishing values associated with high aesthetic and recreational values.

An additional listing of known anadromous lakes was also submitted to the FTF, but because of limited information most of these were not rated.

The Commercial Fish Division identified nearly 500 streams as Category I and Category II salmon streams based on escapement data for the five species of salmon. For example, a stream with a recorded escapement in excess of 50,000 adult pink salmon, Oncorhynchus gorbuscha (Walbaum), was listed as a Category I pink salmon stream. Because of the limitations of available data and time constraints, the rating systems developed by the Task Force were applied only to the important systems identified by FTF members.

Data Prioritization:

After the available data were assembled and the process of evaluation was begun, the FTF began examining methods of prioritizing the data. It was decided to do this on a watershed or estuary basis and then apply these results to the standard Value Comparison Unit rating system required by the Tongass Land Planning process. Three rating systems were developed and employed to portray the values of three areas of concern relating to fisheries values on the Tongass:

1. Commercial fisheries

2. Sport fisheries

3. Estuaries

The Commercial Fisheries rating system (Appendix I) assigns numerical values to watersheds in relation to: (1) the diversity of the five species of salmon, (2) the abundance of those species utilizing the watershed, (3) the available spawning area within a watershed, (4) the morphology of the watershed (stream length and areas of lakes or impoundments), and (5) special values related to commercial fishing.

The Sport Fish rating system (see Appendix II), although similar to the Commercial Fish rating system is significantly different in three respects. The first concerns the species of fish considered, i.e., steelhead trout; rainbow trout; cutthroat trout; Dolly Varden; and other species, such as introduced Arctic grayling, Thymallus arcticus (Pallas); Eastern brook trout, Salvelinus fontinalis (Mitchill); and Kokanee, Oncorhynchus nerka (Walbaum). These species are rated according to diversity and abundance.

The second significant difference concerns the relative allocation of points. A maximum of 25 points was allotted to species diversity and abundance, 25 points to system morphology, and a maximum of 50 points to special values related to sport fishing for a total score of 100 points. The Commercial Fish rating system starts with a maximum total score of 103 points but also provides for the addition of 52 bonus points if specified values are met.

The third difference involves the addition of several sport fishing values which are not addressed by the Commercial Fish rating system. Thus, under the Sport Fish rating system half of the overall score may be derived from the following special values:

1. Unique Watersheds: A watershed that supports rare or unique fish populations or ecological relationships. (40 points).

2. Quality Watersheds: Includes watersheds listed by the Sport Fish Division as "Quality Watersheds--gold pin and red pin areas" and watersheds that are important to the sport fisherman for particular fish species. (40 points).

3. Watersheds containing critical habitat for fish populations, e.g. major Dolly Varden overwintering areas, important silver salmon, Oncorhynchus kisutch (Walbaum), rearing areas, etc. (20 points).

4. Special Watersheds: Watersheds that have received intensive scientific study, rehabilitation, or enhancement, (20 points).

These two rating systems were applied to the important watersheds in Southeast Alaska previously identified by the FTF (710 systems). Area Biologists from ADF&G and the U.S. Forest Service used both systems to rate the watersheds in their areas, and comments were provided in the event that important

considerations were not covered by the basic formats of the rating systems. Thus, of a total of 2,506 salmon streams identified and cataloged by the Alaska Department of Fish and Game, only 710 were rated in relation to the Commercial and Sport Fishing values. These 710 systems were chosen by the FTF members as representing the most important commercial and sport fishing areas in Southeast Alaska with the assumption that the available information for each system would be complete enough to warrant the application of the two rating systems. Information about most of the remaining watersheds in Southeast Alaska was not extensive enough for the rating systems to be applied. It is anticipated that as new information becomes available additional systems will be rated. The frequency distributions of these ratings were then examined and converted to Value Comparison Unit (VCU) ratings of from three to five (five indicating the highest rating). VCU's containing the remaining 1,796 cataloged salmon streams were assigned a rating of two, and VCU's containing only unidentified streams received a rating of one.

The Tongass National Forest was divided into 869 VCU's and the task of delineating the boundaries of the VCU's was assigned to the Recreational Task Force which was also participating in the planning process. Although some effort was made to conform to hydrographic divides, a particular VCU often contained several watersheds with varying values; or in some cases, a large watershed was included in more than one VCU. The FTF decided to resolve this problem by converting the highest rating of any stream within each VCU to the rating for that VCU.

A third rating system was also designed and applied by the FTF to indicate estuarine habitat sensitivity to land use activities (see Appendix III). Under this system, points were assigned relative to: (1) the percentage of the surface area containing waters less than 60 feet in depth, (2) the presence of various species of shellfish and marine fishes, (3) the presence of commercial or personal-use fisheries, and (4) the condition of the estuary (i.e. disturbed or undisturbed). A total of 666 estuaries were rated, and the frequency distribution of the scores was examined. The estuary rating scores were then converted to a VCU rating of three to five. Some VCU's included estuaries that were known to be important for specific reasons. However, because the available information was not extensive enough to warrant the application of the estuarine rating system, the affected VCU's were given a VCU rating directly on the merits of the specific information that was known. All other VCU's adjacent to salt water were assigned a VCU rating of two.

The FTF also considered the existence of and the potential for hatchery sites as an additional fisheries resource value. However, in this instance no rating system was developed, but existing and potential sites were identified and VCU's which included such sites were given a VCU rating of five. Potential non-profit hatchery and aquaculture sites were identified during a survey contracted to Dan Bishop by the two Southeast Regional Aquaculture Associations, and the Fisheries Rehabilitation Enhancement and Development Division (FRED) of Alaska Department of Fish & Game identified all proposed and existing State hatcheries.

FINDINGS

Quality Watershed Surveys

Red Bluff Bay:

The Red Bluff Bay area was visited in July 1977. A helicopter was used to reach the upper forks of stream #109-20-016 at the head of the bay, and a foot survey was conducted from the upper forks to the mouth of the stream (about seven miles). The outlet stream of Deep Lake (stream #109-20-018) on the north side of the bay and Falls Creek (stream #109-20-013) south of the entrance to the bay were surveyed.

In general, the Red Bluff Bay area fits the qualifications for a Quality Watershed, and it has been listed as one of the 19 top quality sport fishing areas in Southeast Alaska. Several factors, however, detract from its value as a potential high-use sport fishing area. Unconfirmed reports indicate that residents of Angoon on Admiralty Island fish the sockeye, Oncorhynchus nerka (Walbaum), run that is supported by the Falls Lake system; and this personal use fishery probably represents the major human activity that currently affects the area. The Red Bluff Bay headstream, although an important fish producer, is unlikely to become attractive as a sport fishing stream because of the difficulty of access along the stream bank, the limited number of good fishing sites, and the general remoteness of the area. The scenic beauty of the bay area, the opportunities for sport fishing within the bay and at nearby Falls Creek, and the shelter provided by the bay itself are positive factors relative to the classification of this area as a Quality Watershed. However, because of the limited recreational potential of the area, I recommend that this system retain its status as a "Quality Watershed" but be reclassified as a "red pin" area instead of one of the top 19 "gold pin" systems in Southeast Alaska (see page 8 of this report for definitions of these classifications).

Red Bluff Bay Headstream (109-20-016):

This stream (map reference: Port Alexander D-3) was last surveyed in 1970, and at that time the Sport Fish Division recommended that no logging be permitted in this watershed. High fish production, probable adverse effects of logging, and the aesthetic quality of the area were cited as reasons for this recommendation.

Fish species utilizing this stream include pink salmon, Oncorhynchus gorbuscha (Walbaum); chum salmon, O. keta (Walbaum); sockeye salmon; silver salmon, O. kisutch (Walbaum); and sculpin, Collus sp. Pink salmon escapements have exceeded 55,000 adults; the maximum recorded for chum salmon was 25,000; and 500 red salmon were recorded in 1966. Although the actual numbers of silver salmon and Dolly Varden are unknown, rearing fish have been trapped, and a rod-and-reel catch rate of 19.2 Dolly Varden/hour was recorded in 1962. About a dozen chum salmon were sighted at the mouth of the river during this survey. Water in the mainstream was slightly glacial and limited visibility. The mainstream temperature was 6°C. Pools were infrequent (P/R ratio <1.20) but when encountered were fairly large and deep (9 to 15 meters wide, 9 to 15 meters long,

and 2 to 2.5 meters deep). Streambanks were heavily vegetated with a dense understory of head-high devil's club. In the more open areas dense patches of salmonberry were common as well as alder and some willow.

The central section of the mainstream consisted of a multiple-channel system with the streambed composed primarily of cobbles or rubble up to 2.5 centimeters (10 inches) in diameter. A spring-fed tributary (temperature = 4.5°C) was located upstream of the central section and a beaver impoundment was located near the mouth. Rearing silver salmon were sighted in the impoundment waters, and although no fish were sighted in the spring-fed tributary both areas are probably important rearing areas.

Deer sign was very abundant in the upper portion of the drainage and two deer were sighted. There was little evidence of deer in the lower portion of the system, but fresh bear sign was found near the beaver impoundment.

The survey of this stream confirmed the appropriateness of prior recommendations concerning the probability of adverse effects of logging activities in the area.

Deep Lake Outlet Stream (109-20-018):

This stream is located on the north side of Red Bluff Bay and contains a barrier falls a few hundred yards above the mouth. About 500 to 1,000 pink salmon were schooling off the mouth of this stream.

Falls Creek (109-20-013):

This stream is located just south of the entrance to Red Bluff Bay and is the outlet stream for Falls Lake. There is a falls at the intertidal zone which ceases to be a barrier at high tides. The stream is only a few hundred yards from the mouth to the lake. The lake covers over 200 acres and has a hanging glacier on the west side. This system supports a run of sockeye salmon, and 2,000 to 5,000 sockeye were schooling at the mouth of the stream at the time of the survey. Dolly Varden were also present.

Plotnikof River System (113-22-028):

This system is located on the south end of Baranof Island on the west side (map reference: Port Alexander, C-3). The system consists of Davidof Lake and Plotnikof Lake with several tributaries and a connecting stream. Plotnikof River drains Plotnikof Lake and reaches salt water at Port Banks. There are several falls and rapids throughout the system, but the only barrier to salmon migration appears to be the falls between Davidof and Plotnikof Lakes.

Substantial runs of silver salmon enter this system and utilize the tributaries of Plotnikof Lake for spawning and rearing. Pink Salmon are periodically seen in the lower portions of Plotnikof River. There is also a run of steelhead trout in the lower river. Populations of rainbow trout, Salmo gairdneri Richardson, and Dolly Varden are well established in Plotnikof Lake and rainbow fishing is excellent. Rod-and-reel sampling during the July, 1977 visit produced several silver salmon; a few pink salmon; two steelhead trout, S. gairdneri Richardson; and a few Dolly Varden. Less than 500 fish were holding at the lower falls (mostly silver salmon)

and an estimated 5,000 silvers and 1,000 pinks were off the mouth of the river.

The Plotnikof-Rezanof systems have been identified as one of the top 19 Quality Watershed in Southeast Alaska, and the Sport Fish Division has recommended that it be placed in a roadless or wilderness status. The brief 1977 visit to the Plotnikof River confirmed this classification and recommendation.

Duncan Canal Salt Chuck (106-43-059):

This system, located at the head of Duncan Canal on Kupreanof Island (map reference: Petersburg, D-4 and D-5), was surveyed in August, 1977; the entire system was mapped, rearing fish were trapped, aquatic insects were collected, and cutthroat trout were tagged at the salt chuck.

This system contains excellent spawning and rearing habitat for several fish species. Rearing silver salmon; Dolly Varden; rainbow trout, and cutthroat trout, Salmo clarki Richardson, were found throughout the system. Some adult chum salmon were spawning in the lower portion of the stream; adult silver salmon, chum salmon, and cutthroat trout were present in the salt chuck. Although none were seen, pink salmon are also known to utilize the system.

Several flocks of Canadian Geese were sighted and evidence of wolves and bears was also noted.

This area is also one of 19 Quality Watersheds in Southeast Alaska and, because of its high fisheries, recreational, and wildlife values, has been recommended for a roadless or wilderness classification by the Alaska Department of Fish and Game. The results of the field activities in this area confirmed these high values and emphasized the need for a roadless or wilderness classification for the area.

Catherine Island IDT Survey:

In June, 1977, Fish and Game personnel participated in a pre-logging survey of the Catherine Island area in cooperation with the U.S. Forest Service. This area is located near Kelp Bay along the east coast of Baranof Island (map reference: Sitka B-3). Surveys were conducted by Sport Fish Division personnel on six streams on Catherine Island to provide recommendations to reduce the impact on fish populations during logging operations. Since personnel from the Commercial Fish Division of Alaska Department of Fish and Game participated more extensively in this IDT than did Sport Fish Division personnel, the Sport Fish Division provided stream survey information to the Commercial Fish Division which then submitted Departmental recommendations to the U.S. Forest Service in relation to the fisheries habitat in the area. The following is a summary of those recommendations:

1. National Creek (no number):
   Follow Fisheries Habitat Management Unit (FHMU) prescriptions listed in the Tongass Guide.

2. Local Creek (112-11-015):
   Follow FHMU prescriptions in the Tongass Guide.
   No unnecessary crossings.
   Any and all crossings should be carefully located by soils scientist so that no sediments will enter stream.
   Keep roads away from unstable areas, such as parts of the south fork (see map area).
   Do not log into floodplain.

3. Thatcher Creek (no number):
   Blue clay was observed in banks approximately 630 meters upstream; roading systems should avoid this area; and soils input is recommended prior to road layout.

4. Brilliant Bass Bay Creek (no number):
   The system is prone to temperature sensitivity, and adequate canopy should be maintained to protect it.

5. Dancing Rainbow Creek (no number):
   This drainage is possibly temperature sensitive.

6. Experience Creek (112-11-014):
   FHMU prescriptions.

7. Sleeping Beauty Creek (112-11-013):
   It is recommended that trees in the floodplain of Sleeping Beauty Creek remain intact to prevent accelerated sedimentation of fisheries habitat. Since blowdown is a problem here, a windfirm leave strip may also be necessary.
   Keep crossings away from unstable areas.

8. Whale Creek (112-21-010):
   Windfall should be left in the stream.
   A leave strip is needed along unstable, steep slipping banks; should be windfirm.
   In braided floodplain sections, do not log into floodplain.
   Windfirm leave strip required on banks here to protect floodplain vegetation.

9. Glacial River (112-21-004):
   Do not log into floodplain at all; floods would undoubtedly wash-out the whole system, destroying existing spawning grounds.
   Road crossings should steer clear of wide floodplains; washing out of crossing would accelerate sedimentation of lower spawning grounds.

10. Clear River (112-21-005):
    Recommend no logging in this area. Extreme instability and wide floodplains are two factors to this recommendation. Logging into floodplains where there is good timber would cause loss of root structures which are holding floodplain intact. A flood at a critical time after logging would wipeout the whole system (soils scientist backs this judgement). Extreme channel instability

threatens roading systems in the area; roads would likely wash-out, sedimenting valuable fish habitat.

11. Great Gairdneri Creek (112-21-008):
Follow FHMU prescriptions.

The following is a summary of the stream survey information collected by Land Use personnel and submitted to the Commercial Fish Division:

Local Creek (112-11-015):

This system is the largest watershed on Catherine Island flowing from the central portion of the island to the eastern coast. A foot survey was conducted on the lower 5.6 kilometers (3.5 miles) of this stream. Rearing silver salmon, Dolly Varden, and cutthroat trout were present throughout the area surveyed with silver salmon being the most common species. The survey area was mapped and a few rearing fish were captured in minnow traps. Pink and chum salmon also use this system.

Local Creek is a clearwater stream with a streambed composed of coarse gravel and rock (up to 20 centimeters, 8 inches) at the upper limits of the survey changing to fine and coarse gravel and rocks (up to 10 centimeters, 4 inches) in the lower portions. The streambed averaged 15 meters (50 feet) wide in most of the survey area; but the stream itself seldom exceeded 6 meters (20 feet) in width, indicating that the waterflow at the time of the survey was probably below normal. The numbers and the extent of areas of blown down timber increases in the lower section with several multiple-channel areas and numerous log jams. No barriers to fish passage were encountered, however, and the blowdown areas appeared to provide good habitat for rearing and resident fish.

Unnamed Stream (112-11-014):

This stream was about 2.4 kilometers (1.5 miles) south of Local Creek and was surveyed by helicopter. It contained numerous waterfalls with the lowest falls forming a barrier to fish passage. The barrier falls was less than a quarter mile from salt water.

Unnamed Stream (112-11-013):

This stream was about 4.8 kilometers (3 miles) south of Local Creek and was surveyed on foot. The upper two-thirds contained numerous waterfalls and no evidence of fish was found. Rearing silver salmon and Dolly Varden were captured in the lower portion below a 9 meter (30 foot) waterfall. The distance from the barrier falls to salt water is less than 0.8 kilometers (0.5 mile).

Original Creek (no number):

This stream, located about 6 kilometers (4 miles) south of Local Creek, was surveyed on foot. It is located in a sharp V-notch with a steep gradient. The streambed is composed of large fragmented rock with very

little gravel, and appeared very unstable. A 2.4 meter (8 foot) barrier was located about 0.4 kilometer upstream and the stream went underground just above the tideland. No evidence of rearing fish was found, and it is doubtful that this stream supports a significant fish population.

National Creek (no number):

This is a small, slow-moving, muskeg-fed stream located near the southeast tip of Catherine Island. About 0.8 kilometer (0.5 mile) was surveyed on foot and no barriers were encountered. Several rearing fish were sighted but species could not be determined. Remains of a salmon carcass were found near the stream.

Unnamed Stream (112-21-010):

This stream is near the southern tip of Catherine Island on the western coast. It was surveyed by helicopter and appeared to possess potentially good spawning and rearing areas in the upper 2.4 kilometers. An attempt was made to locate barriers in the lower portion of the stream, but poor visibility prevented conclusive findings.

Miscellaneous Activities

Five streams were visited as a result of requests from various agencies and individuals.

Kennel Creek:

The logging area at Kennel Creek (112-50-020) near Pavlof Harbor on North Chichagof Island was visited on two occasions at the request of the U.S. Forest Service. The first visit was related to a blasting operation for the removal of a dangerous rock wall adjacent to the main logging road near the lower portion of Kennel Creek. This was primarily an inspection tour to provide an opportunity for on-site discussion of potential impacts on Kennel Creek resulting from the blasting operation.

The second visit to the Kennel Creek area was to inspect bridge and culvert installations along the road system. One hundred and forty-nine bridges and/or culverts were inspected and recommendations were provided where problems were identified. In general, culvert and bridge installation in the Kennel Creek area was of a very high standard and only a few problem areas were located.

Mud Bay Creek:

Again at the request of the U.S. Forest Service project personnel participated in a survey of the proposed road system and stream crossing sites in the area of Otter Lake and Mud River on North Chichagof Island. Since the Otter Lake-Mud Bay Creek system had been identified by Sport Fish Division as one of the 19 Quality Watersheds in 1974 and the recommendation had been made that no logging should occur in this watershed, these points were again emphasized during this survey. During the road survey some of the reasons

for the earlier recommendation were noted in reference to the proposed road, stream crossing sites, and cutting units. Concern was expressed to U.S. Forest Service personnel regarding the road location and the location of some cutting units in the vicinity of Otter Lake. Unfortunately, if a road is to be extended into the Mud Bay Creek Watershed the topography of the area requires that the road pass within 600 feet of Otter Lake along the northeast shore. Road construction in this area without the introduction of an additional sediment load into the system will be very difficult. Also comments were provided to the U.S. Forest Service regarding a proposed bridge site on a major tributary downstream from Otter Lake. Although the site chosen was probably the best in the area, the observation that the area was subject to periods of flooding prompted a request to Forest Service personnel that the hydrology of the area be examined to determine the type of structure that would be required. No other major problems were discovered.

Snake Creek:

Following a report from a Wrangell citizen of logging debris in Snake Creek at Olive Cove on Etolin Island, project personnel flew to the area, confirmed the report, and relayed the information to the U.S. Forest Service. The U.S. Forest Service later reported that the trees had been trimmed and all slash and debris had been removed from the stream; but that since the remaining logs extended from bank to bank and did not block the stream, removal would be deferred until heavy equipment was available in the area.

Hilda Creek:

Another report from a private citizen prompted an on-site inspection of a private logging operation at Hilda Creek on Douglas Island near Juneau. Several violations of Title 16 were noted and the Habitat Section proceeded to insure that all corrective measures were taken.

Traitors Creek:

The observation of a large amount of silt in Traitors Creek north of Ketchikan prompted an on-site examination to determine the source of the problem. Personnel from the Alaska Department of Environmental Conservation and the Alaska Department of Fish and Game (Habitat Section, Commercial Fish Division, and Sport Fish Division) participated in this inspection and several problem areas were located. It was determined that sediment introduction into Traitors Creek was the result of an improper road construction technique. Several miles of road had been constructed on the slope above Traitors Creek with little or no attention to small drainage systems. Subsequently, construction crews began the process of installing the proper culverts.

During the interim between road construction and culvert installation run-off water had accumulated upslope of the road bed, and during the culvert installation process the backed up water was released to wash downslope into Traitors Creek. Several additional problems relating to the introduction of sediment into Traitors Creek were identified and all information was provided to the U.S. Forest Service for corrective action.

White Rock Creek Resurvey

On August 25, 1977 a resurvey of the Florence Bay-White Rock River area was conducted. Land Use personnel had previously participated in an IDT survey of the area in 1972; and subsequently an E.A.R. (Environmental Analysis Report) was prepared by the Forest Service. Personnel from the U.S. Forest Service, U.S. Fish and Wildlife Service, Alaska Lumber and Pulp Company, and the Alaska Department of Fish and Game provided input during the preparation of the E.A.R. Since this resurvey only covered the area in the immediate vicinity of White Rock River from about 8 kilometers (5 miles) upstream to salt water, only recommendations and observations relative to fishery related problems in this area will be considered in this report.

Initial Recommendations:

Recommendations from the E.A.R. include the following:

IX. Management Requirements and Constraints

A. Avoid unnecessary destruction of streamside vegetative cover to stabilize the banks and minimize erosion hazards.

B. Provide timber screen surrounding the grassflat and adjacent shoreline at the mouth of White Rock River, to maintain high quality wildlife habitat, protect deer winter range and protect scenic value.

C. Include leave strips to protect steep canyon walls and braided area of White Rock River.

D. Initiate plans for stream improvement projects. Services of engineering, hydrologists and fisheries biologists will be needed.

E. .....

F. Once the road access in the White Rock area is complete, the possibility of developing a trail for sport fishermen along White Rock River should be investigated.

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N. V-Notch Drainages

V-notch stream drainages are the greatest natural source of stream sedimentation in the landscape. Man's activities usually tend to aggravate the situation. About 70 large V-notches have been mapped on the soil overlays. Many lesser, but potentially hazardous ones remain unlabeled. No set of criteria exists for handling these areas. Each must be treated individually and given its own prescription. The following generalities usually

apply:

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7. Roads should cross V-notches at right angles and log stringer bridges are preferred to culverts.

Sport Fish recommendations submitted by Elliott in 1972 include the following:

1. No part of canyon walls in White Rock River should be logged as it may be prone to serious erosion and debris accumulation.

2. A trail should be built along the canyon wall to provide foot access for the anglers.

3. No part of the braided area should be cut since it is the only extensive area of rearing habitat in the system.

4. There should be no road crossings in the braided area to avoid habitat degradation associated with multiple crossings.

5. All bridges should be plank construction.

6. All tributaries should be logged away from by split settings to avoid debris accumulation and bank degradation.

Resurvey Findings:

In general the resurvey revealed that logging and construction activities in the vicinity of White Rock River had proceeded with proper consideration given to the recommendations listed above, and both administrators and operators should be complimented on their efforts.

Only three areas were found where potential problems relating to fish habitat were apparent.

Area 1. This area involves approximately 61 kilometers (200 feet) of Road #7546 about 0.4 kilometers below the second bridge crossing White Rock River. This stretch of road cuts across a steep slope directly above the mainstream, and there is a good possibility that erosion problems resulting in the introduction of significant amounts of sediment into the main stream could occur. The addition of rip-rap may alleviate this problem, but a hydrologist and/or soil scientist should be consulted.

Area 2. This area involves a culvert crossing approximately 0.8 kilometer below the second bridge crossing the river. The culvert has been placed in a large V-notch and the problem is that there is a drop of about 45 centimeters (18 inches) at the culvert outlet. I would not consider this a major problem, however, since the amount of rearing area available

above the culvert probably does not consist of more than a few hundred feet even if it were accessible. There was no indication that this was ever flagged as a fish stream, and we did not see any fish in the immediate vicinity.

Area 3. This area involves an improperly installed culvert on an identified fish stream. It is located about 200 meters west of the junction of Road #7546 and #7549. There is a drop about 45 centimeters (18 inches) at the lower end of the culvert, and a plunge pool has been formed. The upper end of the culvert is accessible to rearing fish, but there is some debris in and around the stream above the culvert for about 61 meters (200 feet). Some of this material is from an old blowdown; but several trees, apparently felled during road building or culvert installation activities, have been added to the pile. There is not an appreciable amount of fine debris in the stream, however, and fish passage is not blocked (except by the drop at the lower end of the culvert). Rearing Dolly Varden char were identified both above and below the culvert; although none were seen, this tributary probably also supports rearing coho salmon. Since there is from 0.4 to 0.8 kilometer of rearing habitat available above the road, the culvert should be reinstalled or another type of drainage structure used so that upstream progress of rearing fish will not be blocked.

Except for the three specific areas noted above, it appears that most of the recommendations relating to potential fishery problems have been followed, and areas where fisheries habitat could be affected by logging activities in general have been avoided. This has been accomplished by locating most of the cutting units well away from the stream and high upon the hillside where there is little direct influence of fish habitat. Only a few cutting units upstream of the falls approached the stream, and although rearing Dolly Varden char were observed in this area, no serious problems were found. This situation, however, may change during the second entry, 50 to 100 years from now. In addition, it should be noted that E.A.R. recommendations IX.-D and -F and Sport Fish recommendation No. 2 apparently have not been acted upon.

Fisheries Task Force

The available data regarding fisheries resources in the Tongass National Forest were assembled by Fisheries Task Force personnel and divided into four major categories:

1. Sport Fish values
2. Commercial Fish values
3. Estuarine values
4. Hatchery values

The FTF then identified areas where the available information was most extensive and found that this correlated with areas that the various agencies considered to be most important in terms of fishery resource values. Subsequently, the FTF developed and applied three rating systems to these areas.

Sport Fish and Commercial Fish rating systems were applied to 710 watersheds, and an Estuarine rating system was applied to 666 estuaries. Hatchery values were identified by ADF&G in cooperation with consultant, Dan Bishop, contracted by the two Regional Aquaculture Associations.

All available information was evaluated and prioritized in terms of Value Comparison Units (VCU's) which were delineated through the TLMP process so that reasonable land allocation decisions for National Forest lands may be made.

Tables 1, 2, and 3 summarize the results of the prioritization of Commercial Fish, Sport Fish and Estuarine values, respectively, in relation to the 869 VCU's delineated by the planning process. Table 4 identifies existing and potential hatchery sites in the Tongass National Forest.

Information of special interest to the Sport Fish Division was included in the evaluation and prioritization process conducted by the Fisheries Task Force. Table 5 lists the important sport fishing areas that have been identified within the Tongass National Forest, the scores resulting from the application of the Sport Fish rating system, and the associated VCU numbers and ratings.

In terms of the Land Use Project of the Sport Fish Division in Southeast Alaska compilation of the listing in Table 5 has been a major accomplishment. Through the application of the Sport Fish rating system developed by the FTF the important sport fishing areas in the Tongass National Forest have not only been identified, but numerical values from 0 to 100 have been assigned to each which reflect their relative values in terms of the parameters of the rating system. Thus, for the first time since the inception of the Land Use Project, a prioritized listing of the important sport fishing areas is available to land managing agencies as well as specific information relating to each of the identified areas. In the past, although most of the important areas had been identified, specific information was dispersed in the files of various State and Federal offices throughout Southeast Alaska. Now, however, through the efforts of the FTF the basic information about each of the important sport fishing areas (as well as important commercial fishing streams and important estuaries) is readily available for use by any concerned agency.

It must be emphasized, however, that the rating systems and associated priority values are far from perfect and will need to be further revised as more information becomes available and as evaluation techniques become more refined. Another function of the planning process has been to identify areas where basic information is lacking, and to identify research needs. In this sense the findings of the FTF have provided a logical data base which may be used not only for the land allocation process now being implemented by the U.S. Forest Service and other State and Federal agencies, but also for planning future informational and research needs.

Table 1. Summary of Commercial Fish Ratings.

Score	VCU Rating	Number of VCU's
54+	5	302
24 - 53	4	172
0 - 23	3	42
Cataloged Streams	2	297
Unidentified Streams	1	54
No Streams	0	2
	Total	869

Table 2. Summary of Sport Fish Ratings.

Score	VCU Rating	Number of VCU's	Number of Quality Watersheds
55+	5	168	76
26 - 54	4	147	3
0 - 25	3	207	1
			80
Cataloged Streams	2	292	
Unidentified Streams	1	53	
No Streams	0	2	
	Total	869	

Table 3. Summary of Estuarine Sensitivity Ratings.

Score	VCU Rating	Number of VCU's
109-150	5	223
67-108	4	222
24- 66	3	146
VCU's Adjacent to saltwater	2	132
Remaining VCU's	0	146
	Total	869

Table 4. Hatchery Sites.

		USFS Area		
	Total	Chatham	Stikine	Ketchikan
Existing	11	6	1	4
Proposed	38	19	3	16
Potential	22	12	5	5

Table 5. A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by the FTF for TLMP.

Quality Watersheds - Gold Pin Areas (19)

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Anan Creek	100.0	522	5
Situk River	95.0	366	5
Petersburg Lake & Creek	95.0	445	5
Kadake Creek	95.0	421	5
Sweetwater-Thorne Systems	95.0	552, 571, 573, 574, 575, 576, 577, 578, 579, 580, 586, 596, 597	5, 5, 5, 5, 5, 5, 4, 5, 5, 5, 5, 5, 5
Naha River System	95.0	742	5
Karta River System	95.0	606, 607, 608	5, 5, 5
Hasselborg-Thayer Systems	94.0	157, 161, 162, 167	5, 5, 5, 5
Sarkar Lakes System	91.0	554	5
Kanalku Lake	90.5	166	5
Goulding Lake System	90.5	263, 265	4, 5
Pavlof Harbor System	86.5	218	5
Duncan Canal Salt Chuck	85.0	424, 441	5, 5
Castle River	85.0	435, 436	5, 5
Mud Bay Creek	84.0	193	5
Lake Eva	80.0	295	5
Plotnikof-Rezanof Systems	73.0	344, 345	5, 5
Turner Lake	55.0	43	5
Red Bluff Bay	Not Rated	329	3

Table 5. (Continued) A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by the FTF for TLMP.

Quality Watersheds - Red Pin Areas

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Chilkat Lake System	98.0	None	None
Italio River	95.0	379, 380	5, 5
Salmon Bay Lake & Creek	95.0	534	5
Staney Creek	95.0	587, 588	5, 5
Mirror-Low Lake System	95.0	754	5
Black Bear Lake & Creek	90.0	609	5
Orchard Lake	89.0	733, 734	5, 5
Akwe River	87.0	381, 382, 385	5, 5, 5
Sitkoh Lake & River	87.0	244	5
Kook Lake	86.0	239	5
Eagle Lake & River	85.0	519	5
Doame River	84.0	396, 397	5, 5
Thoms Lake & Creek	84.0	479	5
Ward Cove System	84.0	750	5
Unuk River	84.0	784, 785, 786, 787, 788	5, 5, 5, 5, 5,
Kegan Lake & Creek	83.0	684	5
Lake McDonald-Wolverine Cr.	83.0	724	5
Square Lake (Ustay River)	81.0	382	5
Salmon Lake	81.0	323	5
Towers Lake	81.0	440	5
Chilkoot Lake System	80.0	None	None
King Salmon Creek	80.0	143	5

Table 5. (Continued) 'A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by the FTF for TLMP.

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Manzanita Lake	79.5	775	5
Lake Florence	79.0	150	5
Essowah Lakes	79.0	659	5
Hetta Lake	79.0	673.2	5
Arnklin River	78.5	371, 372, 375, 376	5, 5, 5, 5
Baranof Lake	78.5	326	5
Lake Reflection	78.0	727	5
Lake Kathleen	77.0	148	5
Gambier Bay	77.0	170	5
Redoubt Lake	77.0	350	5
Alecks Lake & Creek	77.0	405	5
Eek Lake	77.0	672	5
Snake Creek-Olive Cove	76.0	469	5
Marten Creek	76.0	509	5
Black River	75.0	272	5
Red Lake & Red Bay Creek	75.0	532, 533	5, 5
East Alsek River	74.0	396	5
Hood Bay Creek	74.0	171	5
Pleasant Bay Creek	73.0	168	5
Klakas Lake & Creek	73.0	687	5
Klawak Lake & Creek	73.0	None	None
Dickman Bay	72.0	684	5
Hugh Smith Lake & Creek	72.0	836	5

Table 5. (Continued) A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by the FTF for TLMP.

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Humpback Lake & Creek	71.5	834, 835	5, 5
Young Lake-Admiralty Creek	70.5	113	5
Kah-Sheets Lake & Creek	70.0	434	5
Miller Lake	70.0	682	5
Bakewell Lake & Creek	68.0	826	5
Suloia Lake & Creek	67.0	278	5
Kunk Lake	67.0	463	4
Moose Lake (Taku River)	66.0	46	5
Ella Lake	64.5	773	5
Windfall Creek (Admiralty I.)	62.5	151	5
Deer Lake	61.5	335	5
Pybus Bay	59.0	182	5
Helm Lake & Creek	57.5	716	5
Niblack System	56.5	683	5
Port Krestof	56.0	308, 309	3, 5
Big Bay	51.0	349	4
Blind Slough	41.0	451, 452	4, 4
Ideal Cove Lakes	Not Rated	453	5
Virginia Lake & Creek	Not Rated	502	5

Table 5. (Continued) A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by the FTF for TLMP.

Steelhead Streams

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Anan Creek	100.0	(see above: Q.W.-Gold Pin Areas)	
Situk River	95.0	"	"
Hamilton River	95.0	425, 426	5, 5
Petersburg Lake & Creek	95.0	(see above: Q.W.-Gold Pin Areas)	
Kadak Creek	95.0	"	"
Sweetwater-Thorne Systems	95.0	"	"
Naha River System	95.0	"	"
Karta River System	95.0	"	"
Salmon Bay Lake & Creek	95.0	(see above: Q.W.-Red Pin Areas)	
Staney Creek	95.0	"	"
Mirror-Low Lake System	95.0	"	"
Sitkoh River	87.0	"	"
Castle River	85.0	(see above: Q.W.-Gold Pin Areas)	
Thoms Lake & Creek	84.0	(see above: Q.W.-Red Pin Areas)	
Kegan Lake & Creek	83.0	"	"
L. McDonald-Wolverine Cr.	83.0	"	"
Alecks Lake & Creek	77.0	"	"
Snake Creek-Olive Cove	76.0	"	"
Tunaheen Creek	75.5	428, 429	5, 5
Plotnikof-Rezanof Systems	73.0	(see above: Q.W.-Gold Pin Areas)	
Pleasant Bay Creek	73.0	(see above: Q.W.-Red Pin Areas)	
Hunter Bay Creek	73.0	696	5
Humpback Lake & Creek	71.5	(see above: Q.W.-Red Pin Areas)	
Luck Lake-Eagle Creek	65.0	581	5
Trocadero System	42.0	624	4

Table 5. (Continued) A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by the FTF for TLMP.

Cutthroat Streams

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Anan Creek	100.0	(see above: Q.W.-Gold Pin Areas)	
Hamilton River	95.0	425, 426	5, 5
Petersburg Lake & Creek	95.0	(see above: Q.W.-Gold Pin Areas)	
Kadak Creek	95.0	"	"
Sweetwater-Thorne Systems	95.0	"	"
Naha River System	95.0	"	"
Karta River System	95.0	"	"
Salmon Bay Lake & Creek	95.0	(see above: Q.W.-Red Pin Areas)	
Hasselborg-Thayer Systems	94.0	(see above: Q.W.-Gold Pin Areas)	
Wilson Lake System	93.0	816, 817, 818	5, 5, 5
Sarkar Lakes System	91.0	(see above: Q.W.-Gold Pin Areas)	
Kanalku Lake	90.5	"	"
Goulding Lake System	90.5	"	"
Orchard Lake	89.0	(see above: Q.W.-Red Pin Areas)	
Akwe River	87.0	"	"
Pavlof Harbor System	86.5	(see above: Q.W.-Gold Pin Areas)	
Kook Lake	86.0	(see above: Q.W.-Red Pin Areas)	
Traitor's Creek	85.5	739	5
Duncan Canal Salt Chuck	85.0	(see above: Q.W.-Gold Pin Areas)	
Castle River	85.0	"	"
Eagle Lake & River	85.0	(see above: Q.W.-Red Pin Areas)	
Thoms Lake & Creek	84.0	"	"

Table 5. (Continued) A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by the FTF for TLMP.

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Lake Eva	80.0	(see above: Q.W.-Gold Pin Areas)	
Lake Florence	79.0	(see above: Q.W.-Red Pin Areas)	
Essowah Lakes	79.0	"	"
Lake Kathleen	77.0	"	"
Alecks Lake & Creek	77.0	"	"
Mendenhall Lake	76.5	27, 28, 29	5, 5, 5
Wasta Creek	74.0	722	5
Humpback Lake & Creek	71.5	(see above: Q.W.-Red Pin Areas)	
Young Lake-Admiralty Creek	70.5	"	"
Kah-Sheets Lake & Creek	70.0	"	"
Bakewell Lake & Creek	68.0	"	"
Moose Lake (Taku River)	66.0	"	"
Luck Lake-Eagle Creek	65.0	581	5
Ketili Creek-Barnes Lake	65.0	495	5
Bostwich Lake & Creek	63.0	763	5
Helm Lake & Creek	57.5	(see above: Q.W.-Red Pin Areas)	
Turner Lake	55.0	(see above: Q.W.-Gold Pin Areas)	
Windfall Lake (Juneau)	44.5	26, 28	4, 5
Port Stewart Creek	37.5	719	4
Shelter Island Lake	30.0	124	4

Table 5. (Continued) A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by the FTF for TLMP.

Rainbow Lakes

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Black Bear Lake & Creek	90.0	(see above: Q.W.-Red Pin Areas)	
Walker Lake	78.5	798	5
Plotnikof-Rezanof Systems	73.0	(see above: Q.W.-Gold Pin Areas)	
Klakas Lake & Creek	73.0	(see above: Q.W.-Red Pin Areas)	
Avoss Lake	28.5	346	3
Le Duc Lake (Chickamin R.)	Not Rated	794	5

Dolly Varden Overwintering Areas

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Anan Creek	100.0	(see above: Q.W.-Gold Pin Areas)	
Chilkat Lake System	98.0	(see above: Q.W.-Red Pin Areas)	
Situk River	95.0	(see above: Q.W.-Gold Pin Areas)	
Petersburg Lake & Creek	95.0	"	"
Sweetwater-Thorne Systems	95.0	"	"
Karta River System	95.0	"	"
Salmon Bay Lake & Creek	95.0	(see above: Q.W.-Red Pin Areas)	
Kanalku Lake	90.5	(see above: Q.W.-Gold Pin Areas)	
Sitkoh Lake & River	87.0	(see above: Q.W.-Red Pin Areas)	
Pavlof Harbor System	86.5	(see above: Q.W.-Gold Pin Areas)	
Kook Lake	86.0	(see above: Q.W.-Red Pin Areas)	
Tom Lake	85.0	510	5
Thoms Lake & Creek	84.0	(see above: Q.W.-Red Pin Areas)	

Table 5. (Continued) A Prioritized Listing of Important Sport Fishing Areas in Southeast Alaska in Reference to the Sport Fish Rating System Developed by FTF for TLMP.

Dolly Varden Overwintering Areas

Sport Fishing Area	Score from S.F. Rating System	VCU Number	S.F. VCU Rating
Salmon Lake	81.0	(see above: Q.W.-Red Pin Areas)	
Chilkoot Lake System	80.0	"	"
Lake Eva	80.0	(see above: Q.W.-Gold Pin Areas)	
Redoubt Lake	77.0	(see above: Q.W.-Red Pin Areas)	
Alecks Lake & Creek	77.0	"	"
Mendenhall Lake	76.5	27, 28, 29	5, 5, 5
Red Lake-Red Bay Creek	75.0	(see above: Q.W.-Red Pin Areas)	
Klawak Lake & Creek	73.0	"	"
Kah-Sheets Lake & Creek	70.0	"	"
Kushneahin Lake & Creek	70.0	431	5
Brown Cove Lake (Muddy R.)	65.0	489	5
Luck Lake-Eagle Creek	65.0	581	5
Shipley Lake	47.0	541	4
Windfall Lake (Juneau)	44.5	26, 28	4, 5
Kutlaku Lake	44.0	403	4
Sutter Lake	42.5	536	4
Exchange Cove Lake	39.0	539	4
Streets Lake	36.0	466	4
Hatchery Lake	36.0	472	4
Shakes Lake	34.0	494, 495	4, 5
Harvey Lake	31.0	448	4

Note: Underlined areas have been roaded and/or logged.

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APPENDIX I

COMMERCIAL FISH RATING SYSTEM

Stream Name: Blossom River Number: 101-55-40

VCU Number: 815

A. Commercial Fish Biological Rating System (Circle or check species diversity and abundance.)

1. Species Diversity

	SS	RS	PS	CS	KS - (Bonus 2 pts.)
if species present add 2 pts.	X		X	X	X
if species probable add 1 pt.					
if species absent add -0.5 pts.		X			

Total 7.5 (8 pts. max. plus Bonus)

2. Species Abundance (use maximum recorded escapements)

	SS	RS	PS	CS	KS (Bonus)
escapement	>500	>10000	>50000	6000	All strms add 15 pts.
escapement	100-500	1000-10000	10000-50000	500-6000	add 10 pts.
escapement	. . . . .	. . . . .	unknown	. . . . .	add 0 pts.
***escapement			>250000	>50000	add 25 pts.

Total 55 (45 pts. max. plus Bonus)

***Bonus score which must be documented in Comments section.

3. Available Spawning Area - m^2

unknown	
>10,000	X
>5,500 but <10,000	
>1,500 but <5,500	
>500 but <1,500	
>0 but <500	
0	

Total 62.5

Total A. = 1. + 2. (50 pts. max. plus Bonus)

B. Commercial Fish Physical Rating System

1. System Morphology

**a. add 1 point for each mile of stream length (round to nearest mile) 71 total miles.

b. add 1 point <5 acres, 2 points >5 acres, for each lake or impoundment within watershed.

Total B. 25 (25 pts. max.)

C. Commercial Fish Special Values (Justify pts. in Comments section)

Suggested:
-Weir sites - 2 pts.
-Enhancement potential - 10 pts.
-Preemergent sample streams - 5 pts.
-Unique management situations - 1-15 pts.
-Exceptional productivity - 1-15 pts.

Total C. 0 (25 pts. max.)

Total Commercial Fish Rating - A. + B. + C. (118 pts. maximum plus Bonus)

Comments

Total 87.5 VCU Rating 5

** Stream barriers will not be considered to provide for potential stream productivity and enhancement.

APPENDIX II

SPORT FISH RATING SYSTEM

Stream Name: Blossom River Number: 101-55-40

VCU Number: 815

A. Sport Fish Biological Rating System (BRS) (Circle or check species diversity and abundance.)

1. Species Diversity

		CT	SH	RB	DV	Other
species present	(2 pts.)	___	___	___	X	___
Species probable	(1 pt.)	___	___	___	___	___
species absent	(-0.5 pt.)	X	X	X	___	___

2. Species Abundance

	CT	SH	RB	DV	Other	
if escapement	>500	>100	>500	>500	>500	add 3 pts.
if escapement	<500	<100	<500	<500	<500	add 1 pt.
if escapement	. . . . . is unknown					add 0 pts.

Total 3.5 (15 max.)

B. Sport Fish Physical Rating System (PRS)

1. System Morphology

**a. add 1 point for each mile of stream length (from 1" to mile map and all stream systems shown, round to nearest mile).
Total miles 71
b. add 1 point ≤5 acres, 2 points >5 acres, for each lake or impoundment within watershed.

Total 25 (25 max.)

C. Sport Fish Special Values

1. Unique Watersheds (+40 pts.)

2. Quality Watersheds (+40 pts.)

3. Watersheds containing critical habitat (+20 pts.)

4. Special Watersheds (+20 pts.)
(see definitions)

Total C. = 1. + 2. + 3. + 4. 40 (50 pts. max.)

Sport Fish Values (50 pts. max.)

+40 pts. 1. Unique Watersheds: A watershed which supports rare or unique fish populations or ecological relationships (e.g. only known island run of KS in southeast, N. Pike in Yakutat lakes, etc.)

+40 pts. 2. Quality Watershed: Includes watersheds listed by S.F. Division as "Quality Watersheds - gold pin and red pin areas," and watersheds that are important to the sport fisherman for particular fish species (e.g. important steelhead streams, etc.)

+20 pts. 3. Watersheds containing critical habitat for fish populations (e.g. major Dolly Varden overwintering areas, important silver salmon rearing areas, etc.)

+20 pts. 4. Special Watersheds: Watersheds which have received intensive scientific study, rehabilitiation, or enhancement (e.g. weir sites, lakes with introduced populations, etc.)

Comments

Total 68.5 (100 pts. max.) VCU Rating 5

APPENDIX III

ESTUARY RATING FORM

Name of Estuary: Wilson Arm

Location and USGS Map No.: KTN B-2 & B-3 VCU's 818 & 819

Surface Area in Acres at MHHW: 1540 + 1020 = 2560

Percent of Area less than 60 feet deep: 900 + 240 = 1140 45%

Rating Points

Size: (1 Point for each 1,000 acres)		3
Percent of Area less than 60 feet: (1 Point for each percent)		45
Type of Estuary: Undisturbed	(10 Points)	
Disturbed	(5 Points)	5

Comments: Points are given for commercial and personal-use fisheries. Points are also given for known populations and nursery areas for certain species, as follows:

Crab	(a) Dungeness	Present (2 Pts.)	2
		Fishery (5 Pts.)	5
	(b) Tanner	Present (2 Pts.)	
		Fishery (5 Pts.)	
	(c) King	Present (2 Pts.)	
		Fishery (5 Pts.)	
Shrimp		Present (2 Pts.)	2
		Fishery (5 Pts.)	
Other Shellfish		Present (2 Pts.)	2
		Fishery (5 Pts.)	
Herring	(a) Spawning (2 Pts.)		
	(b) Bait Fishery (5 Pts.)		
	(c) Roe Fishery (5 Pts.)		
Smelts		Spawning (2 Pts.)	
Total			64
VCU Rating			3

Comments